

ABSTRACT OF THE DISCLOSURE

A system and method of providing a transmission span for a telecommunications link based on a remote Er^{3+} -doped fiber amplification scheme is provided, where a transmission span comprises first through third segments each respectively comprising first-third optical fibers having first-third fiber lengths and first-third physical properties. The first and third segments are optically coupled to opposing ends of the second segment. At least one of the first and third physical properties is different from the second physical property, where the first segment provides low nonlinearity, the third segment provides distributed gain, and the second segment compensates for the dispersion of the first and third segments. The span also includes a fourth optical fiber that is doped with a non-zero concentration of Er^{3+} , and is disposed at a location in the span for remote pumping to provide discrete amplification of the optical signal. The location can be within the first segment, within the second segment, within the third segment, at an interface between the first and second segments, and/or at an interface between the second and the third segments.